HEALTH RISK OF AROMATIC AMINES

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Standard North American cooking procedures such as broiling, frying, and barbecuing, and standard heat processing, and pyrolysis of protein-rich foods induce the formation of potent mutagenic and carcinogenic heterocyclic amines. These same compounds produce tumors at multiple organ sites in both mice, rats and nonhuman primates.

Numerous epidemiology studies suggest a correlation of meat consumption with cancer in humans. Because of these findings it is important to determine whether these mutagens/carcinogens contribute to human cancer incidence. This can be done by identifying and quantifying the human intake of these heterocyclic amines in the diet, understanding the mechanistic-relevance of animal studies for humans by characterizing important metabolic pathways, and understanding the dose-relevance of high dose animals studies for human risk assessment by assessing the dosimetry from ingestion of these potent mutagens at low doses. We will be discussing the use of accelerator mass spectrometry and FISH methods for sensitive analysis of DNA adducts and cytogenetics, respectively, to help answer some of these problems. It is also looking very possible to monitor heterocyclic amine carcinogen metabolites in urine using HPLC/MS to look for trends in carcinogen activation and detoxification and effects of various chemopreventative agents. We will also talk about specific mutations at the *aprt* locus in CHO cells. Finally, we will look at the overall human risk from consuming foods containing these heterocyclic amine carcinogens in light of higher levels of PhIP being found in chicken.

In summary, methods are now available for rapid determination of ppb levels of heterocyclic amines in food and their dependence on the cooking time, temperature and type of food is being better understood. The role of individual susceptibility to these carcinogens is still needing to be defined.

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